

Heart Failure (HF) is a complex syndrome characterized by high rates of hospitalisations and mortality, poor medication adherence, and polypharmacy. Recent studies demonstrate that approximately 50% of hospitalised patients with HF are readmitted within 6 months and 50% of patients die within five years of diagnosis. The rate of medication non-adherence in HF patients is 40–60%. There is emerging evidence that HF patients who receive pharmacist-involved multidisciplinary care have better clinical outcomes than those who do not. The overall aim of this thesis was to investigate how advancements in the management of HF can be achieved through a pharmacist-involved multidisciplinary management model of care to improve patient outcomes. A systematic review and meta-analysis was utilised to review existing randomized controlled trials (RCTs) of pharmacist-involved multidisciplinary management of HF to determine the effectiveness on different clinical outcomes. Subsequently, a retrospective data analysis of chronic heart failure (CHF) patients was used to evaluate the comparability of two multidisciplinary clinics through describing differences in demographic and clinical characteristics, comorbidities utilisation of evidence-based practice and predictors of evidence-based therapy in outpatients from a tertiary referral hospital.

The retrospective analysis compares those attending a pharmacist involved Multidisciplinary Ambulatory Consulting Service (MACS) with the General Cardiology Heart Failure Services (GCHFS) without a pharmacist. 18 RCTs (n=4630) were included for the systematic review and 16 (n=4447) for the accompanying meta-analysis. The meta-analysis showed a significant reduction in HF hospitalisations {odds ratio (OR) 0.72 [95% confidence interval (CI) 0.55-0.93], p=0.01} but no effect on HF mortality. Similarly, a significant reduction in all-cause hospitalisations [OR 0.76, 95% CI (0.60-0.96), p=0.02] was revealed but there was no effect on all-cause mortality. The overall trend was an improvement in medication adherence and significant improvements in HF knowledge (p<0.05).

The mean age of patients in this study was 79 ± 10 years for HF with preserved ejection fraction (HFpEF), 76.5 ± 11 years for HF with mid-range ejection fraction (HFmrEF) and 71 ± 13.4 years for HF with reduced ejection fraction (HFrEF) patients. The prevalence of HFpEF, HFmrEF and HFrEF was 31%, 13% and 56%, respectively. Compared with HFpEF patients, HFrEF patients were younger (71 years v. 78 years) and more likely to be male (64% v. 43%), more likely to have ischemic aetiology (57% v. 51%) but less likely to have hypertension (55.4% v. 82%) and AF (44% v. 53%). Comparing patients with reduced to mid-range and preserved ejection fraction, patients were at least 7 years older and much more likely to be female, had higher SBP, more polypharmacy, higher prevalence of diabetes, COPD, hyperlipidaemia, GORD, osteoarthritis, worse renal impairment and worse anaemia.

CHF patients in the pharmacist-involved multidisciplinary clinic (MACS) were significantly older, less likely to be female, had higher SBP and DBP, were under polypharmacy and had a high prevalence of multiple comorbidities; thus, they represented a complex group of individuals compared with the GCHFS clinic patients. Both the clinics in the cohort study had similar rates of guideline-based prescribing of angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs), and their maximum tolerated doses in HFrEF and HFpEF patients. However, significantly lower ($p < 0.001$) β -blockers and mineralocorticoid receptor antagonists (MRAs) prescribing rates were revealed in the MACS clinic in HFpEF and HFrEF patients.

The pharmacist-involved multidisciplinary team in HF management significantly reduced HF and all-cause hospitalisations and improved medication adherence as well as HF knowledge. Older age of patients, heart rate, blood pressures, contraindications, comorbidities and polypharmacy were the potential reasons for lower prescription of β -blockers and MRAs in MACS clinic in HFrEF and HFpEF patients.

Based on the findings presented in this thesis, the pharmacist is an essential member of the multidisciplinary team and should be included in HF management irrespective of setting.